# Seasonal Occurrence of the Hawaiian Cerambycidae (Col.)[1]

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In ecosystem studies and other ecological and evolutionary studies forming part of the Hawaii IBP subprogram, "Island ecosystem stability and evolution," a knowledge of the seasonal occurrence of adult cerambycids is required. This paper presents the information available at this time from the published record and from the collections now existing in Honolulu and in the British Museum (Nat. Hist.). Presumably this includes the records for nearly all the material that has been collected by entomologists, as far as it has been documented as to dates of collection. Some additional information is presented in the following tabulation. This includes the approximate number of specimens which are documented by collection or rearing dates, for each species, the altitude range for each species, and the last known year of collection, for endemic species, and the first known year of record for introduced species. An "x" indicates a rearing date and straight lines represent adult collecting records.

The endemic Hawaiian Cerambycidae stem from only three separate evolutionary lines. Two of these, represented by *Parandra* and *Megopis* respectively, consist of a single species each, of separate subfamilies. All the others, the nearly 120 species of plagithmysines, evolved in Hawaii or its pre-existing islands from a single ancestor. Although eight genera have been named to contain them, these have been reduced, partly by us, now to only a single genus.

As may be surmised from the numbers of specimens with date-records, some species are known from very few individuals. In some cases, a long series may have been collected on a single date, or reared during a short period. Thus, very limited information is available concerning the seasonal occurrence of many of the endemic species. As is suggested by the data presented, a number of species are known from but a single collection, in some cases several decades in the past.

In our experience, individual adult plagithmysines may live up to 6 or 8 weeks in captivity. Thus, it can be anticipated that seasonal occurrence of most species may be much more extensive than is here indicated. With the mild climate, and relatively little seasonal temperature change, it is possible that many of the species may occur as adults during a great

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TABLE 1. *Seasonal occurrence and altitude range of adult native Hawaiian Cerambycidae.*

| | *No. of dated spec* | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sept* | *Oct* | *Nov* | *Dec* | *Alt* (m) | *Yr. of last coll'n* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Parandra puncticeps* Sharp | 51 | – | – | —— | —— | —— | —— | —— | —— | —— | —— | – | — | 300–1280 | 1969 |
| *Megopis reflexa* (Karsch) | 30 | | x– | – | – | —— | – | x—— | —— | —— | – | | | 1100–1250 | 1967 |
| *Plagithmysus* (*Nesithmysus*) | | | | | | | | | | | | | | | |
| *bridwelli* (Perk.) | 20 | – | xxxx– | xxx– | – | | | – | x | x | | – | | 600–1280 | 1954 |
| *forbesii* (Perk.) | 5 | | xxx | | – | | —— | | | | | | | 950 | 1920 |
| *haasi* (Perk.) | 19 | x | xxxx– | x | | | | —— | | | | | | 600–1280 | 1969 |
| *peleae* (G. & D.) | 3 | | | | x | x | | | | | | | | 1100 | 1970 |
| *P.* (*Aeschrithmysus*) | | | | | | | | | | | | | | | |
| *dubautianus* (G. & D.) | 4 | | | – | | | | | – | | | | | 2500 | 1964 |
| *peleanus* G. & D. | 1 | | | | | x | | | | | | | | 1100 | 1970 |
| *swezeyanus* G. & D. (*A. swezeyi* Perk.) | 2 | | | | | | —— | | | – | | | | 2500 | 1927 |
| *swezeyellus* Gr. (*N. swezeyi* Perk.) | 1 | | | x | | | | | | | | | | 1200? | 1927 |
| *terryi* (Perk.) | 4 | | | | | | | | | – | | | | 3040 | 1927 |
| *yoshimotoi* G. & D. | 1 | | | | | | – | | | | | | | 2000 | 1965 |
| *P.* (*Paraclytarlus*) | | | | | | | | | | | | | | | |
| *annectens* (Sh.) | 5 | | | | — | | | | – | | | | | 1200 | 1925 |
| *laticollis* (Sh.) (*fugitivus* Perk.) | 2 | – | | | | – | | | | | | | | 1300–1500 | 1926 |
| *pipturicola* (Perk.) | 1 | | | | | | – | | | | | | | ? | 1920 |
| *podagricus* Perk. | 1 | | | | | | | | | | – | | | 1260? | 1919 |
| *timberlakei* (Perk.) | 1 | | – | | | | | | | | | | | 1000? | 1916 |
| *P.* (*Neoclytarlus*) | | | | | | | | | | | | | | | |
| *abnormis* (Sh.) | 2 | | — | | | — | | | | | | | | 1500 | 1898 |
| *acaciae* G. & D. | 82 | | — | | | xxx | x | | | | | xxxxxx | xxxxxx | 1060 | 1969 |
| *atricolor* (Perk.) | 6 | | xx | | – x– | x | | | | | | | | 2200–2740 | 1971 |
| *bidensae* Gr. | 3 | | | | | | | | x– | – | | | | 700 | 1971 |

Note: – = adult collections, x = emergence from pupa.

Table 1 continued

| | *No. of dated spec.* | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sept* | *Oct* | *Nov* | *Dec* | *Alt* (m) | *Yr. of last coll'n* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *chenopodii* (Perk.) | 167 | xxxxxx | —— | —— | — | —— | x | | | | | | xxx– | 460–900 | 1955 |
| *claviger* (Sh.) | 9 | | | – | | — | x | | | | – | – | | 1580 | 1952 |
| *debilis* (Sh.) | 20 | | | | | | | | – —— | — | | | | 1200–1500 | 1935 |
| *decurrensae* G. & D. | 45 | | | | | | | xxxxxx | | — | | — | | 1000 | 1952 |
| *dodonaeae* (Swez.) | 29 | x | | xxx | xxxx | xx | xx | | xxxxxx | | xxxxxx | | | 2000 | 1970 |
| *dodonaeavorus* Gr. | 17 | | | | | | | | x— | –x— | | | | 400–500 | 1971 |
| *dubautiae* G. & D. | 36 | | | | | — | | | | xxxxxx | | — | | 1980 | 1952 |
| *d. arboreae* G. & D. | 22 | | | | | | | | | | — | —— | xxxxx | 2200 | 1952 |
| *euphorbiae* (Bridwell) | 81 | xx | | x | — | — | xxxxxx | | x | | | | xxxxxx | 5 | 1950 |
| *filipes* (Sh.) | 61 | x | xxx | | xxxxxx | xx | | xxx | x– | xxx– | | — | xxxxxx | 1200–1800 | 1946 |
| *f. sophorae* G. & D. | 18 | xx | x | — | — | | xxxxxx | xx | | | — | — – | x— | 1000–2040 | 1971 |
| *fragilis* (Sh.) | 6 | | — | | — | | — | | | — | | — | – | 760 | 1957 |
| *geranii* (Perk.) | 3 | | | | | | — | — | | | | | | 1800–2400 | 1968 |
| *hardyi* Gr. | 3 | | | | | | — | | x —— x | — | | | | 900–1000 | 1971 |
| *immundus* (Sh.) | 55 | | | | | | | | | | | — | — | 900 | 1900 |
| *indecens* (Perk.) | 60 | x | xxxxxx | | | | | xxxxxx | | — | | | | 1219 | 1929 |
| *kainaluensis* (Perk.) | 9 | | | x | | | | – | —— | | | | | 800–1100 | 1970 |
| *longipes* (Sh.) | 50 | | — | | | — | xxxxxx | | — | | | | | 600–1000 | 1970 |
| *lookii* (Swez.) | 215 | | xxxxxxxxxxxx | | | – | — | — | xxxxxx | | | — | xxxxxx | 1100–2050 | 1971 |
| *l. keanakolui* G. & D. | 5 | | | | | | | | | | | | — | 1800 | 1952 |
| *l. ukae* G. & D. | 192 | xxxxx | | | | | | | | | | xxxxx | | 1000 | 1968 |
| *mediocris* (Sh.) | 19 | | | | | — | | — | | | | | | 1200–1500 | 1913 |

Table 1 continued

| | *No. of dated spec.* | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sept* | *Oct* | *Nov* | *Dec* | *Alt* (m) | *Yr. of last colln'* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *metrosideri* G. & D. | 1 | | | | | | | | – | | | | | 1200 | 1949 |
| *mezoneuri* (Swez.) | 2 | | | | | | | | | | | x– | | 600 | 1945 |
| *modestus* (Sh.) | 22 | — | x | — | – | — | —— | — | – | | | | | 950–1500 | 1971 |
| *montgomeryi* G. & D. | 25 | xxxxxx | x | xxxxxx | | | | x | | | | | | 1830 | 1970 |
| *nodifer* (Sh.) | 87 | xxxx | xxxxxx | — | | | | xxxxxx | —— | | xx | xx | | 900–1500 | 1971 |
| *obscurus* (Sh.) | 31 | | | | —— | —— | — | | – | | | | | 900–1200 | 1921 |
| *pennatus* (Sh.) | 97 | — | ——x | –x— | —— | —— | — | xx | —— | | —— | —— | | 900–1500 | 1971 |
| *pulchrior* Perk. | 1 | | | | | | | ? | | | | | | ? | ? |
| *railliardiae* Perk. | 15 | | | | | | — | | — | | | | | 3000 | 1927 |
| *rusticus* G. & D. | 1 | | | | | — | | | | | | | | 2000 | 1952 |
| *smilacis* Perk. | 11 | xx | xxx | | | | | | — | | | | | 1400 | 1929 |
| *smilacivorus* G. | 3 | | | | | | x | —— | —— | | | | | 200 | 1971 |
| *superstes* Zimm. | 1 | | | | | | | | | | | | —— | 2 | 1938 |
| *ultimus* (Sh.) | 5 | | | | — | | | — | | | | — | | 580 | 1952 |
| *usingeri* G. & D. | 1 | | | | | | — | | | | | | | 500 | 1958 |
| *wattleae* G. & D. | 19 | | | xx | xxxxxx | xx | xxx | x | | | — | | | 1000 | 1970 |
| *P. (Plagithmysus)* | | | | | | | | | | | | | | | |
| *aequalis* (Sh.) | 100 | – | —— | | —— | —— | —— | | — | | | | | 600–1500 | 1924 |
| *aestivus* (Sh.) | 20 | | | | — | | — | | — | | | | | 1200 | 1907 |
| *albertisi* (Sh.) | 30 | –xxxxx | — | —— | | — | | — | | —— | | | —— | 300–760 | 1964 |
| *attenuatus* Boisd. (*cristatus* Sh.) | 137 | —— | —— | x–x— | —— | —— | —— | xxxx– | x | | — | —— | —— | 500–1000 | 1969 |
| *bilineatus* (Sh.) | 339 | – | | — | | — | —— | xxxxxx | x—— | —— | | —— | | 800–1200 | 1958 |
| *bishopi* (Sh.) | 77 | | | | | — | –xxx | xxxxxx | —— | x | | | | 1200–1350 | 1934 |

Table 1 continued

| | *No. of dated spec.* | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sept* | *Oct* | *Nov* | *Dec* | *Alt* (m) | *Yr. of last coll'n* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *blackburni* (Sh.) | 188 | | x—— | ——— | xx | —— | xxxxxx | xxxxxx | | | ——— | x | xxxx | 1200–2300 | 1971 |
| *cheirodendri* G. & D. | 1 | | | | | | | | – | | | | | 2000 | 1958 |
| *collaris* (Sh.) | 20 | | | | | | | | | | | | x— | 1500 | 1896 |
| *concolor arachnipes* Sh. | 106 | | | x | xx– | xxx | x–xx | xxxxxx | —— | – | | | | 1200 | 1971 |
| *concolor concolor* Sh. | 24 | | | | | —— | ——— | —— | xx– | | | | | 1000–1220 | 1932 |
| *concolor munroi* Sh. | 97 | xxxxx | xxxxxx | xxxxx | xx — | xxxxxx | ——— | x —— | xxxxx | x | x – | x | | 1000–1500 | 1969 |
| *cuneatus* Sh. | 68 | x | xxxxxx | x——— | xx– | –x–xx | xx—— | — | | | x | xxx | | 300–600 | 1971 |
| *darwinianus* Sh. | 159 | | | | | | | ——— | xxxxxx | xxxxxx | | | | 1200 | 1927 |
| *davisi* Swez. | 14 | | — | —— | xxxxxx | x | | | | | | | | 600 | 1961 |
| *decorus* Perk. | 6 | | x—— | xx | x | x | | | — | | | | | 500–1070 | 1970 |
| *diana* Sh. | 16 | | | | | x | | —— | | | | x | | 1200 | 1970 |
| *elegans* Sh. | | | | | | | | | | | | | | 900 | |
| *finschi* (Harold) | 47 | | | | —— | —— | | | — | | | | | 1200–1500 | 1932 |
| *forbesianus* G. | 1 | | | | | | | – | | | | | | 1200 | 1917 |
| *frater* Perk. | 1 | | | | | | | | | | | | | 900 | 1902 |
| *fractus* Perk. | 1 | | | | | | | | | | | | | 500? | 1900 |
| *funebris* Sh. | 161 | —— | — | | —— | xxxxxx | —— | —— | ——— | —— | – | | | 1800–2100 | 1969 |
| *giffardi* Perk. | 93 | | | | | | ——— | —— | xxx | | | | | 1100–1220 | 1934 |
| *gracilis* Sh. (*bishopi* var.) | | | | | | | | | | | | | | 1100? | 1900? |
| *greenwelli* G. & D. | 1 | | | | x — | | | | | | | | | 1200 | 1969 |
| *hirtipes* (Sh.) | 1 | | | | | | | | | | | | | 600 | 1919 |
| *ignotus* Perk. | 18 | | | | | xxxxxx | xxxxxx | x — | ——— | | | | | 1220 | 1971 |
| *ilicis* G. | 2 | | | | | | | – – | — | | | | | 1100 | 1971 |
| *koae* G. & D. | 4 | | | | —— | | | | —— | | | | | 450–1000 | 1967 |

Table 1 continued

| | *No. of dated spec.* | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sept* | *Oct* | *Nov* | *Dec* | *Alt* (m) | *Yr. of last coll'n* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *koaiae* G. & D. | 34 | | xxxxxx | x | | | | | | | | | | 1070 | 1965 |
| *koebelei* Perk. | 23 | x– | — | | — | | —— | | | — | — | | x– | 600 | 1938 |
| *kohalae* Perk. | 1 | | | | | | | | | – | | | | 1200 | 1919 |
| *kraussi* G. & D. | | | | | | | | | | | | | | 500 | 1950 |
| *kuhnsi* Perk. | 13 | —— | ——— | –xxx | | x | | | | | | | | 600 | 1954 |
| *lamarckianus* Sh. | 42 | x | | | —— | — | | —— | —— | | —— | | —— | 1100–1220 | 1929 |
| *lanaiensis* Sh. | 1 | | | | | | | — | | | | | | 900 | 1894 |
| *longicollis* Perk. | 1 | | | | | | – | | | | | | | 600 | 1920 |
| *longulus* Perk. | 15 | | | | | | | | | —— | | | —— | 450–600 | 1920 |
| *microgaster* (Sh.) | 20 | xxx | x —— | –xxx— | –x– | | | – | | | – | —— | —— | 500–1000 | 1934 |
| *molokaiensis* Perk. | 25 | | | | | | | | | | | | ——— | 975 | 1925 |
| *muiri* Perk. | 18 | —— | | | | | | | | | | | x— | 1200 | 1934 |
| *newelli* Sh. | 1 | | | | | | | — | | | | | | 1200 | 1913 |
| *nicotianae* G. & D. | 18 | xxx | —— | | | | | | xx | | | xxxxxx | xxxx— | 600 | 1969 |
| *nihoae* Perk. | 1 | | | | | | —— | | | | | | | 100? | 1923 |
| *paludis* Perk. | 1 | | | | | | —— | | | | | | | 1200 | 1917 |
| *perkinsi* Sh. | 28 | | | | xxxxx | | ——— | x——— | x—— | | | | | 100?1800 | 1923 |

Table 1 continued

| | *No. of dated spec.* | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sept* | *Oct* | *Nov* | *Dec* | *Alt* (m) | *Yr. of last coll'n* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *permundus* Sh. | 13 | | — | | | | | | | | | | | 600 | 1897 |
| *perrottetiae* G. & D. | 7 | | | | | | xx | x— | | | | | | 1220 | 1971 |
| *pittospori* G. | 24 | | | | | | | x | x——— | –x—x– | —x– | — | | 950 | 1971 |
| *platydesmae* Perk. | 6 | | | x– | | | | | – | | | | | 920 | 1919 |
| *polystictus* Perk. | 1 | | | | | | | — | | | | | | ? | 1932 |
| *pulverulentus* (Mots.) | 81 | —— | ——— | —xx– | ——— | ——— | ——— | ——— | xxxx | ——— | ——— | —— | —— | 300–920 | 1970 |
| *pulvillatus* Karsch | 3 | | | | | | | | | | — | | | 1500 | 1896 |
| *rubi* Perk. | 1 | | — | | | | | | | | | | | 1100 | 1926 |
| *sharpianus* Perk. | 4 | | | — | | | | — | — | | | | | 1200 | 1928 |
| *simillimus* Perk. | 10 | | | | — | | — | — | | | | | — | 1200 | 1928 |
| *simplicicollis* Sh. | | | | | | | | | | | | | | 900 | 1900 |
| *solitarius* Sh. | 63 | —— | – ——— | ——— | ——— | xx | | — | ——— | —xx— | ——— | | xxxxx— | 600 | 1934 |
| *speculifer* Sh. | 1 | | | | | | — | | | | | | | 800? | 1894 |
| *sugawai* G. & D. | 27 | | | | x | xxxxxx | xxxx— | xx—— | xxxx | | | | | 1250 | 1970 |
| *sulphurescens* Sh. | 14 | | | | | | | —— | | | | | | 1150 | 1895 |
| *swezeyi* Perk. | 1 | | | | | — | | | | | | | | ? | 1917 |
| *ukulele* G. | 1 | | | | | | | | | — | | | | 1250 | 1919 |
| *varians* Sh. | 650 | — — | ——— | ——x | xx— | ——— | xxxxxx | xxxxxx | ——— | ——— | –xxx– | ——— | ——— | 2040 | 1971 |
| *vicinus* Sh. | 3 | | | | | | | | ? | | — | | | 900 | 1892 |
| *vitticollis* Sh. | 46 | | | | | | — | —— | –xxx | | xx | | x | 1200–1530 | 1971 |

TABLE 2. *Seasonal occurrence of adult introduced Cerambycidae with first year collected.**

| | *No. of dated spec's* | *Jan* | *Feb* | *Mar* | *Apr* | *May* | *Jun* | *Jul* | *Aug* | *Sept* | *Oct* | *Nov* | *Dec* | *Yr. of first coll'n* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Xystrocera globosa* (Olivier) | 155 | – | | x–x—— | xxxxxx | — | — | —x— | –x—— | — | — | —— | —xx | 1900 |
| *Phoracantha semipunctata* (F.) | 25 | | | x | xxx | | x | | | xxxxxx | xx | | | 1965 |
| *Curtomerus flavus* (F.) | 178 | x | x—xx | –xxxxx | x–xxxx | — | xxx | x–x— | xxxxxx | ——x | ——x– | xxx–x– | –xxx– | 1902 |
| *Gelonaetha hirta* (F.) | 65 | –xxxx– | — | — | — | – | — | xxxxxx | — | | x— | –x | x | 1900 |
| *Ceresium unicolor* (F.) | 82 | | xx | —xxx | xxx–x | ——xxx | —— | —xxx | —— | –x—— | ——x | —xx— | x | 1904 |
| *Placosternus crinicornis* (Chevrolet) | 248 | – | ——x– | –––x– | –– | | —— | – | —— | x–x— | —xx– | x–xx– | – | 1904 |
| *Chlorophorus annularis* (F.) | 42 | —— | | – | —— | –xx– | —— | — | | | – | | | 1905 |
| *Plagiohammus spinipennis* (Thomson) | 18 | | | | | | | | | x– | x | | | 1959 |
| *Coptops aedificator* (F.) | 60 | —— | | —— | ——x | – | —— | —— | — | —— | – | — | — | 1900 |
| *Lagocheirus undatus undatus* (Voet) | 219 | —x | xxx | ——xx | –x– | ——x | —x | —— | —— | ——xx– | — | —— | x——x | 1892 |
| *Archlagocheirus funestus* (Thomson) | 8 | | | | | | xxxxxx | | | xx | | | | 1964 |
| *Prosoplus banki* (F.) | 200 | x–xx | –xx–x | xx–x– | –xx | –xx | xxxxx | – | —x–x | — | – | xxx–x | ——x | 1897 |
| *Pterolophia bigibbera* Newman | 97 | xx– | –x | xxx—— | –xxxx | – | x– | —— | — | — | –x— | xxxxxx | —— | 1930 |
| *Oopis nutator* (F.) | 87 | —— | ——xx | —xxxx | – | x— | – | — | xxxxx | – | –x– | x | —— | 1892 |
| *Mimectatina meridianus* (Matsushita) | 5 | | | | | | – | | – | | | | | 1951 |
| *Sybra alternans* (Wiedeman) | 341 | x–xxxx | —xxx– | –xx–xx | —xxx– | —xxx– | ——x– | xx— | —— | –xx– | —— | x—x | xxx | 1917 |
| *Apomecyna saltator* (F.) | 110 | | | —— | – | xx—— | – | – | xxx—— | –xxxx– | | x– | – | 1906 |

* – = Adult collection x = Emergence

All of these species are associated with introduced plants and therefore occur primarily at low altitudes. None of them have been found to our knowledge above the altitude of 900 meters. Additional species with isolated records, which are probably not established in Hawaii, are the following:

*Semanotus amethystinus* (Lec.) Nov. 1931 (1 specimen); *Clytus pilosus* Forst. subsp. *glabromacultatus*, June 1938 (6); *Xylotrechus colonus* (F.), Apr. 1947 (1); *Monochamus* sp., Oct. 1971 (1); *Batocera davidis* Fairm., July 1969 (1); *Aerenicopsis championi* Bates, Apr. 1960 (1).

part of the year. However, it is as yet too early to safely state that many of the species have definite seasonal cycles, or occur as adults the year around.